

AVIATION WEEK

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MAY 15, 1950



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Expert users are certainly evidence of satisfaction in the selection of a plane and in the selection of a make of hydraulic equipment. Like the initial Constellation flows by Eastern Air Lines, these of most recent purchase have Vickers Hydraulic Equipment.

As indicated in the illustration above, many purposes are served by Vickers Equipment. In addition to the main 1750 psi hydraulic system, there is an independent 3000 psi variable speed hydraulic transmission to control the output of the cabin pressurization and air conditioning compressors. (See photograph of right.)

Vickers Hydraulic Controls for aircraft are so widely preferred because they do the job dependably, smoothly and accurately. For further information, ask for Bulletin 49-32.

VICKERS Incorporated
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Cabin Supercharger Drive

VICKERS HYDRAULIC MOTOR



VICKERS VARIABLE DISPLACEMENT PUMPS

Vickers Variable Delivery Pumps and Hydraulic Motor are used in combination as a variable speed drive motor for accurate and dependable speed control of cabin air compressors. These Vickers instruments automatically deliver the speed and power required to maintain the desired cabin pressure regardless of varying volume demand and engine speed.

40-1

**NEW CONTINUOUS AIRCRAFT
FIRE DETECTOR**
automatic resetting,
positive protection

The new Kidde Aircraft Fire Detector, now in the approval stage, is made from a continuous fire sensing element which has no moving parts. Made to fit snugly around motor and other danger spots, it will repeat fire signals without resetting—can be set to give warning when predetermined temperatures are reached. Fire-resistant, it is unaffected by fumes, moisture, salt or other agents which might cause malfunction.

When the element is exposed to flame, or predetermined temperature, a signal light, which can be hooked up with a horn, warns the pilot. The warning signal stay on as long as the flame—go out when the fire is out. They will repeat the signal, without manual resetting, if fire should strike again.

The design is so simple, fire alarms from mechanical failure are impossible. With no moving parts, maintenance is negligible.

Kidde's member important Kidde contribution to air safety. For fire detection or prevention problems of any kind—call Kidde.

Kidde



Walter Kidde & Company, Inc., 518 Main Street, Belleville 6, N. J.
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INDUSTRY OBSERVER

►Four manufacturers are fighting it out in the fusion plane competition at Ft. Bragg, North Carolina, a fifth is scrambling frantically to get its damaged plane back in the running. Cessna, Piper, Embraer and several Locomobile are the active competitors. Fletcher Aviation Corp., Pasadena, Calif., would have been there too, but Fletcher's two jets had back in a preliminary flight test at Wright Field. The test pilot and observer bailed out of the Fletcher prototype after controls were damaged, apparently in a dive. The good-looking fusion plane, then leveled off, suspended, and made a fairly good landing by itself even though the landing was quite close.

• If the Navy's Lockheed P-3V Poseidon Turtle had been piloted by Wright TurboCruise 15 engines, instead of the earlier Cruise 11s it used, its world long-distance flight record could have been 2,500 miles longer. That's what Wright Aeromarine Corp. engineers say. The record, on the same fuel, would have been 15,467 miles, instead of being 11,736 miles.

► One of the facts about the very fast Martin XB-51 three-jet bomber, still not generally known, is that low-pressure tires are used on the plane for better close in ground troop support landings and takeoffs on rough fields.

► Was offside called but did not find, an obvious operational problem in the recent Chelsea flight from Manchester to New York International Airport and demonstrates that offside is observed. Observers were not bothered to check but when they stood a normal distance from the plane on the ramp. No crying had occurred, was observed on runway. And two offside on enough fuel could be normal for normal plane structure was normal whether if the method were not sufficient.

► Recent mystery "explosion" in the Wright Field vicinity was traced to a test pilot in a jet fighter (probably F-95A) who turned on his afterburner and produced a traffic cone that was thrown downward by a peculiar combination of cloud reflection and atmospheric conditions.

► Recent Russian reports of landing sites for long-range guided missiles aimed at the U.S. recall similar German reports in 1945, although based on far more propaganda. Russian stories may have come from recent discovery of a long-range V-1 type, known as a pilotless turbojet aircraft, since the German air distinguish between nuclear-powered types. Do the reports may be completely phony, like some German reports planted in Berlin, August.

▲ **Gilman I. Martin Co.** has licensed a new flame-retarding resin composed to do Plasti for further research and probable eventual commercial production. Designated "TIMP," the compound was originally developed by Martin for flame-retardant curtains and upholstery for the 2-4-1 series. It is designed to be durable when laundered as directed and to remain soft to the touch.

► NACA research facilities were ordered exclusively in development of the unique quadrupole landing gear used on the new Fairchild C-120 detachable pod plane, due to be flown any week now at Hagerston. Scientists' analysis disclosed that the plane had completely different stability characteristics, both longitudinal and directional, and different center of gravity ranges, with the knowledge pod on or off, requiring elaborate dynamic stability calculations before the plane could be built.

*Two helicopters suggest one on display current in Washington. Although T-40 double turbine installation (rated at 5500 hp), complete with gearbox but lacking propeller, is on display in the Navy Department lobby. British Overseas Airways Washington office (1124 Connecticut Ave.) is exhibiting an Armstrong Siddley Mustang rated at 3010 brake hp plus 307.5 at thrust.

► Consolidated Vultee's delta-wing XF7A experimental jet fighter was flown back to San Diego by Capt. Charles Yeager, first supersonic pilot, for installation of a later and more powerful Allison J44 engine with after burner. Plane will be returned to Edwards AFB for further tests following completion of modifications.

WHO'S WHERE

In the Front Office

Adm. John M. Reeves, Jr., has been appointed general manager of Los Angeles department of airports and is scheduled to take office here just about June 15. Adm. Reeves retired from the Navy May 1 after serving 34 years. He completed flight training at Pensacola in 1935. In 1943 he joined NAVAIR, where during that time he worked with the Air Force. He concluded his Navy career with the Pacific Command.

Floyd S. Bennett Jr. has been named to head of Inland Oil & Corp. He joined the company's merch division in 1946, and later became sales director. The position of chief merchandiser is being filled by F. A. Bowers.

C. Stewart Fingerson has been made both a full director of Marshall College, a division of Rensselaer Polytechnic Institute, at Troy, N. Y., where he will be responsible for developing new heat and mass transfer books, using materials for aircraft, automobiles and industrial fields and will also direct the company's new product and research department. He formerly was with General Electric for 11 years as chemical engineer and coordinator.

Robert J. Turner has been named regional director for Northeast Airlines. Prior to joining NEA, Turner had been general manager of Eastern Air Lines for 15 years. During the last year he worked with the Air Transport Command as chief of staff of the North Atlantic division and as a traffic officer of the Caribbean and Pacific commands.

Richard S. Manner has been appointed regional controller of Chicago & Southern Air Lines. He obtained his position as a result of the merger. During 1941-1945 he worked with Civil Aeronautics Board on the general controls staff and posted C&S in the fall of 47.

Honors and Elections

John C. Leslie, *President, American*
1987, has been elected a director of the current
and effective June 1. He will be responsible
primarily regarding the late **Howard B. Owen**,
Vice President, **Ballantine Inc.**, New York City.

to Loda. Wilbur W. Keith has been chosen to head of Lockwood Tavern, replacing H. E. Kyles. C. S. "Coney" Beane has been named to serve a one-year term as president of the Vesp. Club, N. Y., succeeding Gus Joffett Bradley. Three new ups at the club are, D. M. Mawley, Roger Wible, John and E. M. Richardson.

A. F. Logan has been elected regional president of Burety Airways. Charles H. Bell has been named president of the Compañía del Cielo. Nelson F. Brady was elected to the board of Mail Central Airlines.

Bill Robb Wilson, Herald Tribune aviation editor, has received America's Best Top Gold Medal for "distinguished service in aviation promotion." Capt. Donald Dewell, Jr., North American Aviation engineering test pilot, has been awarded a Gold Leaf Charter for his "No Medal for Flight" test work on model aircraft.



Air Force's standard troop and cargo transport, the Fairchild C-119 Packet, with Hamilton Standard propellers.





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THIS BIG SPACIOUS...friendly airport, located smack in the busy center of New England's flying activities, is a bright spot on anyone's air map. Travelers and local fliers have discovered the many advantages of its modern equipment, complete and efficient services and the cooperative...generally hospitable spirit of the East Coast Aviation Corporation, its management and working personnel.

It's not surprising that Bedford Airport is patronized heavily by private fliers, cargo carriers, military units and research flying. Nor is it surprising that such an airport provides its customers with top quality Cities Service aviation products and services...inclusively. For throughout the nation you'll see more and more alert, well-manned airports displaying the bright, brilliant green and white signs of Cities Service.

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CHECK THESE EXTRAS

Convenient location—complete C.A.A. authorized maintenance—control tower, radio and night lighting facilities (24 hrs.), including non-directional lighting beacon and flashing air beacon—three 7000' runways—flying school—charter service—restaurants—and only 20 minutes to downtown Boston by bus or "drive-yourself" auto.

Cities Service Aviation Greases

Cities Service Koolwater and

Cities Service Aero Oils

Cities Service Citrol Solvent Engine Cleaner

Cities Service Aero Greases and

Aviation Specialty Lubricants

New Jet Planes in the News...



NORTHROP YF-15, long-range, photo-reconnaissance plane powered by an Allison J35A turbojet as its first flight is delayed.

JFE. New external pod installation of two engines. Latest type legible: the engines are fitted in "hangar" air position.



NORTH AMERICAN YF-104, long-range penetration jet fighter, is much faster than world speed record-holding F-106 Sabre from

which it was developed. P-40 Turbo Wasp engine delivers 1250 B. thrust dry, and 3000 B. thrust with afterburners.



EH-101 single-engine fighter is improved. Vought's latest more powerful EH-101C turbojet and turbine air fuel.



MARTIN XB-51 bomber two years out of Martin Airport as its first flight and gets its gear up as a heavy.

Where Prototype Testing Money Would Go

An Coordinating Committee's involved breakdown of proposed expenditures of \$12,495,000 for testing, operation and modification of jet and turbo-prop aircraft during a two-year period, over operational routes (Johnson-Reverend Senate Bill 1504) shows:

Two-Year Operational Tests

• Operating 6 jet planes first year on commercial route pattern for \$1800 an hr. for 180 hrs.	\$300,000
(To obtain data for turbine engine flight engine. No insurance allowance.)	
• Operating one jet plane 1 hr./day at rate of 100 dry/hour.	480,000
(Based on DC-6 direct operating cost of \$2300/hr. Plus 100 percent for more fuel and low utilization.)	
• Conversion of 2 Constellation or Martin 2-0-2's to turbojets.	385,000
• Operation and testing of two civil type planes with turbine power:	
1. 180 hr. CAA type certification at \$1000/hr.	180,000
2. 180 hr. CAA accelerated service tests at \$750/hr.	135,000
3. Operation of two planes at 600 hr. test at \$150/hr.	300,000
(Assumes 450 hr. 150-day test period, cost projected from \$133/hr. present operating cost of Constellation and Martin 2-0-2.)	
• Operating 6 jet planes second year for 1200 hr. at \$550/hr.	420,000
• Operating two civil type planes, turbine power, second year, (2000 hr. at \$350/hr.)	300,000
Total Operational Tests	\$2,790,000

Note: Jet plane shown in first, second and 600 hours presently will be North American B-45 light jet bomber designed for a total operational program of this type to provide operational experience on multiple aircraft under simulated commercial transport conditions.

Grand Total Operations, Testing, Modification . . . \$12,495,000

Prototype Tests

• Testing three four-jet passenger transport prototypes:	
1. Operating three planes 250 hr. each for CAA certification at \$5500/hr.	\$2,250,000
(After losses 20,000-lb. payload, 2400 mi. range, 500-mph. block speed.)	
2. Operating three planes 200 hr. each for CAA accelerated service test at \$1800/hr.	1,800,000
3. Operating six planes (two of each of three types) 1800 hr. each for airline operational flight test at \$300/hr.	1,800,000
• Testing one long-range cargo prototype powered with four turbojet engines:	
1. Operating plane 250 hr. for CAA type certification at \$4000/hr.	1,000,000
(Plane carries 50,000-lb. payload, 2000 mi. range, 325-mph. block speed.)	
2. Operating plane 150 hr. for CAA accelerated service test at \$1000/hr.	450,000
3. Operating two planes at this type 300 hr. each for airline operational flight tests at \$500/hr.	300,000
• Testing one short-range cargo prototype powered with two turbojet engines:	
1. Operating plane 250 hr. for CAA certification at \$750/hr.	200,000
(Plane carries 33,000-lb. payload, 1000-mi. range, 300-mph. block speed.)	
2. Operating plane 150 hr. for CAA accelerated service test at \$750/hr.	105,000
3. Operating two planes at this type 300 hr. each for airline operational flight tests at \$100/hr.	100,000
• Modifying and allowing five prototypes at \$500,000 allowance for each plane for problems in flight and service testing periods.	2,500,000
Total Prototype Testing Program	\$10,105,000

Prototype Fund Need Set Before Senate

Hearings accent gap between \$12.5-million U.S. test plan and heavy British outlay.

By Alexander McNairly
U. S. military and aircraft manufacturers badly need government financing

for jet transport prototypes. Test airplanes built the Senate Committee on Interstate and Foreign Commerce last week.

They like the Air Coordinating Committee's \$12.5-million program for testing new transport prototypes. But whether that money is enough to break the deadlock of U. S. jet transport development as the first issue is greatly doubted.

Differences between that amount and the \$500 million which Great Britain

repeatedly has invested in its postwar jet transport prototype development was pointed up repeatedly before the Senate committee last week.

Senator Ed Johnson, chairman of the committee, and Senator Owen Brewster, senior ranking Republican member, named a sympathetic co. for the issue part, to U. S. transport needs.

But questioning from the Senators, and testimony of the witnesses over the last few days of the hearings, indicated some trouble in the thinking of the committee and the witnesses. From time to time it began to make these forecasts:

• **Scouts Bill 1504**, the \$12.5-million testing program, (first reported in Aviation Week Jan. 15) is the only bill under consideration at the hearing which has much chance in the present Congress.

Definitely headed for oblivion are two other bills: S. 1507 calling for a new federal agency, the Aircraft Development Corp., to spend \$100 million for transport to be used, or modified for military emergency, and S. 1505 which would \$5 million for development of new industrial and personal aircraft.

• **Senator Johnson and Brewster**, most outspoken members of the committee, are not about to spend any of the \$12.5-million testing money in testing a Canadian or British jet prototype transport.

They think most of the \$500 million already spent on British transport development has come from U. S. contributions. "U. S. is going to make any further jet transport development contribution, let it be for U. S. developments to catch up with the British ones, at their own risk."

• **U. S. Airlines** are taking a peaceful position. They would either have U. S. jet transports. But if they have to compete with foreign airlines using foreign jet transports, they are willing to buy them, too.

Sampling of testimony at the hearing shows agreement that the \$12.5-million testing program justified in accordance with the following points:

• **John L. Lusk**, Department of Defense general counsel: "The Department of Defense is not given any obligation as responsibilities under the bill, and it is therefore, outside the purview of our operations and jurisdiction. The Department does not feel anything in this bill which interferes with military operations or plans and we have agreed to endorse it."

• **Joseph J. O'Connor**, Jr., CAB chairman: "The board would go on as usual in these hearings as looking for early enactment."

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Many obstacles likely to prevent any other prototype program from winning the vote in the House of the Budget.

It was the House's ruling which stopped the Air Force effort in the current session of Congress, from carrying out a more extensive program.

Some sources say that the House did not want to handle the program, and was glad to be relieved by the House of the Budget. But at any rate, the House spoke, and the \$12.5-million program which had been planned to build two transport prototypes, one military, one commercial designed for military conversion, was stopped.

• **Senator Johnson** and **Senator Brewster** are the hearing made one thing clear. The \$12.5-million program to be conducted by CAA is all that the Budget House will approve. Anything larger presumably from the forward-looking part of President Truman's veto, if it should get through Congress.

Report appears about the \$12.5-million program with CAA Administrator Dr. David Heston, who will have to administer it.

"I wish I could share some optimism that an expenditure of \$2.5 million a year for five years would accomplish as much as the British expenditure at \$12.5 million," Sen. Johnson told his ally for testimony. "Comparing \$2.5 million against \$12.5 million isn't very exciting."

Retired pointed a glowing picture of actual transportation planning and development efforts of their own by the government effort to finance the testing. It was a picture which was largely rubbed out later on, by the more realistic spokesmen for airlines and manufacturers.

Johnson insisted to a change proposed in the bill which would transfer the administration of the testing program from the administration to the Department of Commerce. Johnson explained that it was outgrowth of the proposed transportation plan for the Department of Commerce, giving all power to the secretary.

"What are you doing," Johnson asked, "knowing that we ship off your own head?"

"That is carefully covered," Retired replied.

Operation of whether a phase of the testing program involving testing jet aircraft on an airline operational pattern, might involve use of the Canadian Avro jetliner or the British in Havilland Comet turboprops, brought satisfactory verbal assurances from the witnesses.

Obviously the airline spokesmen, Sen. Johnson and Brewster, were quite willing to have the hearings jet transports.

"You mean you think the right



needle the American manufacturers into development of a new fighter called "F-100 Down," assistant secretary of Commerce for Air, told the committee he thought the program would apply only to American planes. And Administration he believed that he thought the "Air American" clause in U.S. procurement contracts would stop any purchase of the Canadian or British jet for the program, but he added, maybe a leasing program would be worked out.

Originally it had been planned to do this buying operation with four North American fighter B-47 bombers, Davis told the session. However, the Air Force has never agreed to turn over the necessary planes for the operation, and Pentagon sources say Davis' want to release them.

Sidelight of the Defense Department testimony was the explanation by Maj. Gen. Lawrence Kuter, MAI's commander, of criticism on Taiwan. Taiwan (Associated Press May 1). Most of the criticism on slow handling and inadequate equipment, he said, was focused on requirements for personnel, not on the equipment, but on slow and heavy cargo. Such aircraft are under procurement he added.

"No one would quarrel with the contention that some new specialized transports could be used to do all this," said Kuter.

Fully equipped present-day cargo planes against a better equipment and "shooting you out for 50 cents" was pointed out by the director of Defense general contract. Lufthansa emphasized the need for bringing military transport pilots and crew on a schedule if they were to be part of the operations of MAI's.

Air Force Stars May Shine Brighter

Air Force will give these fighter generals and 10 fighter generals if they are introduced on Capitol Hill last week a credit.

Bills introduced simultaneously by Sen. Clifford Tydings (R-496) and Rep. Overton Brooks (D-1277) would place USAF for the first time on an equal status with Army and Navy. Each is authorized to have five fighter generals and 12 lieutenant generals, while the Office Personnel Act of 1947 still kept Air Force to four four star and 15 three star ranks.

General Hays S. Vandenberg, Air Force Chief of Staff, told the House Armed Services Committee last week that this statutory limitation is seriously impeding command functions of the Air Force.

"We had another," Vandenberg declared, "in many instances unable to

provide officers of rank commensurate with positions of great command and staff responsibility, and only under the command structure of USAF but also as joint staff composed of members of our land-sea-air team, and in combined command and staff organizations composed of American officers and those of other nations."

"Our major combat commands—the Strategic Air Command and Continental Air Command and Air Materiel Command by lieutenant generals," Vandenberg said. "Our present command general of the Air Materiel Command is also a lieutenant general despite the fact that he is responsible for providing the entire logistical support of USAF and controls resources valued in terms of \$12 billion."

Four top ranking USAF generals, Vandenberg also pointed out, are currently assigned to special duties outside the Air Force and therefore are not available for USAF posts. These are Gen. Joseph T. McNamara, director, Defense Department Management Committee, in Civil Aeronautics Board, Commanding, Joint Task Force, Three, in Gen. Herbert Harbois, USAF Representative on the United Nations Military Staff Committee, and Lt. Gen. Louis Stoltz, Commanding, "Eastern Sector," and now chief for management.

If the proposed legislation is enacted, Strategic Air Command, Continental Air Command and Air Materiel Command will be commanded by four star generals. This will be in addition to two four star ranks for Chief and Vice-Chief of Staff, USAF.

Generals which will be lost for three star commanders will include Air Training Command, Military Air Transport Service, Air University, Air Force Air Command, Technical Air Command, Research and Development Command, U.S. Northern Command, U.S. Air Force in Europe, For East Air Force, Inspector General, Special

Assistant for Reserve Forces, Military Staff Committee Representative, Chief of Staff, Director of Staff, Defense Department, Deputy Commander, Strategic Air Command, Deputy Commander, Continental Air Command, Deputy Director, Air Materiel Command, Deputy Chief of Staff for Operations, Deputy Chief of Staff for Maintenance, Deputy Chief of Staff for Personnel, Deputy Chief of Staff, Group, Deputy Chief of Staff for Development, and, commandant of one of the joint colleges.

Avon for Australia

(McGraw-Hill World News)

McKee-Thomas, the Commonwealth Aircraft Corporation, now building 5000-B thrust Rolls-Royce Neos turbojet engines, may soon change over to the more advanced Rolls-Royce Avon. The Tay may be considered an alternative. The Avon would be used to power the Canberra bomber, due to be built in Australia, and an Australian designed transport fighter.

McKee-Thomas, production of Neos is coming ahead of the assembly of Vampire fighters which are at present the only order for the jets. Twenty engines are being completed at Vampire facilities at the Hamilton, N.S.W., plant of the de Havilland Company. So far, six have complete engines have been delivered to the Royal Australian Air Force. These are 50 Vampires on order for delivery by the second half of 1955, but assembly is well at the rate of one machine a month.

Commonwealth Aircraft Corporation took up for production of the Neos three years ago and de Havilland's branch plant in New South Wales got ready for assembly of the Vampire in about the same time. In the meantime, de Havilland bought out General Motors' share in Commonwealth Aircraft Corporation.



B-36 ENGINE NACELLE CARRIER

B-36 can carry four of its own type propellers to advance faster by action of new engine nacelle carrier there re-

ported from plane's bomb bay. Two pods are interconnected by cables. Each carries two engines, is 32 ft long.

Redesigned Wing Marks New Jet Fighter

YF-96A, developed from Republic's Thunderjet, features swept wing.



56-FT WING and bent-tail of YF-96A are explained here. Side view shows...

May Gen. Kenneth F. McNaughton, Director of Training, USAF, disclosed during testimony on the 1955 Air Force budget that the plane probably will be altered for quantity production. He stated that the Air Force is planning to procure an F-96A, mobile training unit out of 1955 funds. Otherwise, training units of aircraft are ordered only when a model is in sufficient quantity production.

Discussions of the YF-96A are wing span 54 ft, length, 38 ft, and height, 14 ft. Minimum gross takeoff weight is 25,000 lb., 3,000 more than the F-44E. The plane is 9 ft longer and 1 ft 2 in. higher than its predecessor the F-44E. Wing design of the new plane includes provision for additional external fuel storage. Republic and the wing design also would permit added external armament, such as rockets and bombs, and external fuel tanks.

The Air Force has stated that design performance characteristics for the new fighter exceed those of the F-94E. The plane was dismantled and flown to Edwards AFB, Calif., where it is being modified for flight test late this month. Two tests were completed at Republic Aviation Corp., plant, Farmingdale, Long Island.

Republic reported that the craft was being used under its own power within 187 days after the date the company's experimental shop started the first engineering drawing.



SWEEP RUDDER. Fuselage carries four F-44E boosters. Front view shows...



SHORTER WINGS of 36-ft span, about three feet less than that of F-44E model

AMC Streamlines Contract Procedure

As Materiel Command has streamlined the administration of contracts for maintenance and modification of military aircraft.

Present AMC contract processing is handled under a directive which states that USAF procurement field offices are to liaison status between contractor and Air Force.

Under the program, field offices assume complete responsibility for reviewing and evaluating applications for initial entry and continuation status on lists of qualified maintenance contractors. Then they forward lists to AMC headquarters for final approval and publication in a master list of qualified contractors.

Field branch for evaluation of contract applications within each field office are charged with continuous review and reapplying lists as well as the addition of new applicants as qualified. At the same time field offices are charged with completing all necessary preliminary work in connection with bids, negotiations, etc.

Prospective contractors still must meet rigid qualifying criteria as to financial responsibility, experience, facilities, and accounting policies, etc., but elements of security, necessary cost and delay are expected to be satisfied by the declassification. Commercial facility needs are in the category.

- **Jetstream Aircraft** (fiber-covered, single engine).
- **All-Metal Aircraft** (single-engine).
- **All-Metal Aircraft** (two-engine), up to and including C-43, T-7, T-31, etc.
- **C-47 Through C-54** and similar aircraft.
- **Very heavy multi-engine aircraft** (B-29 and larger).

Tichenor Dies

Fred A. Tichenor, widely known aviation editor and publisher, died at his home May 4 following a short illness. He was 69.

Mr. Tichenor became active in aviation following his acquisition of Aero Digest magazine in 1922. In later years he published *The Sportsman Pilot*, and *A Letter to Airman*.

He also acquired publications in other fields, including *The Sport, The Post*, and *The New Outlook*.

He was a founder and past president of the Wings Club, an honorary member of the Early Birds, a member of the Civil Air Patrol League, a member of the Institute of Aeronautical Sciences, and a member of the advisory committee for aeronautics of the Department of Commerce.

RCAF Operates Ten CF-100 Fighters

USAF may buy a few of Avro Canada's all-weather twin jets to evaluate against the F89 Scorpion.

The Royal Canadian Air Force has placed contracts with A. V. Roe Ltd. for ten of the Canadian-designed and built CF-100 two-place, all-weather jet fighters. The jet fighter plane made its U.S. debut last week, when it was flown for U.S. Army and foreign military observers at Andrews AFB, Md. Indications in Washington are that USAF may order a small number of the Canadian fighters to evaluate its characteristics against its American counterpart, the Northrop F-89 Scorpion, and to indicate agreements agreed by nations under North Atlantic Treaty and Mutual Defense Assistance Programs.

The plane is 52 1/2 ft. long, with a wing span of 52 ft. Height is 14 ft. 7 in. Equipped with a tricycle landing gear, the plane is of all-steel construction and weighs approximately 27,000 lb. No rear section (wing) engine

on roller, four engines and a retractable landing gear wheel bay. One of two prototypes is in an actively test configuration: wind-tunnel and a supersonic canopy. Fuel is carried in tanks located behind the rear crew member.

The wing of the CF-100 has no dihedral. The canopy features a high tailplane. A straight forward fuselage and radar are employed.

Ten Rolls-Royce Avon engines developing 7,700 lb. static thrust power the CF-100, but production models will be powered by jet engines scheduled for Canadian-designed Avro Canada dual-flow turbojet engines. The engines are mounted above the wingroot on either side of the fuselage.

The plane was designed to meet Canadian U.S. joint defense requirements with light fighter requirements without duplication of aircraft manufacturing in Canada as in the United States.



BRITISH ASW COMPETITORS

Two new British ASW planes designed for anti-submarine warfare developed preliminary flight tests on the Fawcett 37, powered by an Armstrong Siddeley Double Mamba turbojet unit, through constant testing profiles, and the Blackburn V.A. 4, now using a Rolls-Royce Griffon jet engine as a temporary powerplant pending

a later turbojet installation. Interest will probably be the state that breaks the British ASW competitor's back. He and the job of developing digital computers to the state where they are ready for commercial use is comparable in magnitude with the effort put into software development of radar.

Automatic Control of Air Traffic Far Off

A Massachusetts Institute of Technology research program has warned that automatic air traffic control is still 15-20 years away.

Much more study and development work must be applied to logarithmic digital computers (mechanical) before the automatic traffic control system, C. R. Winger told an American Institute of Electrical Engineers meeting recently in Providence, R. I. He said reliability of computers must be improved through better vacuum tubes and components, and invention of new circuit elements.

At present, Winger declared, large-scale digital computers which contain only 10,000 vacuum tubes or tubes are in the early stages of development, and such machines which have been completed are generally regarded as experimental. Application of computers is a large field which so far has only been touched at the edges.

Two Types-Winger explained that there are two central systems which can use the high-speed digital computers. One controls almost entirely of radar station processing, where the logic is simple.

The second system controls of several interdependent quantities where the logic is more complex—such as automatic control of air traffic. This requires computation of control instructions for up to 100 aircraft at a busy airport.

The MIT engineer said that speed may be the deciding factor in using the first type of control. But the factor in the second type are so complex and require such that information processing that the digital computer is more than a competitor for the conventional human technician—it is a necessary replacement.

As Winger says it, the jet engine will probably be the state that breaks the human traffic controller's back. He and the job of developing digital computers to the state where they are ready for commercial use is comparable in magnitude with the effort put into software development of radar.

Great Lakes Radar Fence on the Way

Newest bid, in USAF's Boeing as the fence building program will be constructed in the Great Lakes industrial region.

The latest radar defense post will consist of installations at Mason City, Iowa; East Waukegan, Illinois; Waukegan, Wis.; and Detroit, Mich. The proposed

radar sites represent USAF's first public admission that it is establishing some U.S. defense radar units. Air Force officials say the post will be linked with the already existing air defense system of the Pacific Northwest and North Atlantic regions.

The decision was first made during congressional hearings on the subject. It was later confirmed by the Air Force, but detailed information in connection with the new sites was declared "highly secret."

The air defense zone, North Atlantic seaboard, 200 miles offshore, extends from the northeastern tip of Maine, northeast to Norfolk, Va. Any unidentified aircraft in this area will be intercepted and challenged by USAF fighter planes.

The air defense zone, Pacific Northwest, extends from the Canadian border southwest to a point on the Pacific Coast opposite North Bend, Ore. The defense boundary runs eastward to San Francisco, Calif. Plans are under way to extend the defense zone southwest to Lower California. It is expected to be in operation by January 1, 1952.

Eventually, the entire United States will be blanketed by similar "defense zones" established to guard against surprise air attack from any quarter. For the present, however, the zones are being made available only in strategic national areas and primarily in areas where atomic energy developments are under way.

Outer radar defense sites are under construction at Murphy Dome and Fair

Island, Alaska. Others, either under construction or being planned jointly by Canadian-U.S. defense establishments, will stretch across northern polar waters from Atlantic to Pacific.

Subsidies Benefit Towns, Not Airlines

"Not" and pay to air carriers is largely a subsidy in the small communities which they are required to serve successfully and not in the cities, San. Edwin Johnson (D., Calif.), chairman of the Senate Interstate and Foreign Commerce Committee, reported to the Senate Appropriations last week.

Johnson's report maintained as a review study by his committee, made at the request of the appropriations group which has demanded repayment of cost per hour subsidy.

Among government and industry representatives, Johnson stated, "agreement was reached that airlines carrying only a long line business and agricultural aircraft are not likely to be able to operate profitably without subsidy."

He recommended legislation repealing subsidy from congressional and pay and increasing it on a community-by-community basis. All other operation payments have been suspended since January 1 as a result of the new law. Under Johnson's plan, communities, instead of air carriers, would be designated as "government subsidized."



AFTERBURNERS BOOST SCORPION'S CLIMB

Afterburners appear to be the new style for U.S. fighter planes and the Northrop F-89 is no exception. Added thrust is expected

to up Scorpion's rate of climb. Note added large boost under body between two closely spaced and flow jet engines.

PRODUCTION

Lear Activity

Company modifies plant at Grand Rapids, Mich., for avionics output.

Lear, Inc.'s profitable balance sheet for 1949—\$510,946.59 net profit on sales of \$7,368,000—reflects the company's activity in the avionics field.

Lear is modifying a portion of its Grand Rapids, Mich., facilities to handle its Air Force contracts for avionics parts and gyroscopic instruments.

A completely air conditioned, dust-free manufacturing and material assembly area has already been completed. Tooling and setup production is set for the second part of this year with peak production planned for early 1951.

Concerns needed to date and under inspection are scheduled to insure the delivery of both products through early 1951. Orders now on hand total \$4,900,000. Delivery of a new model electronic direction finder was slated for last month. Development and production engineering studies are being accelerating cut down to a point where the sales price will be 54 percent of that of the prior model.

Last year, the electronic mechanical assembly accounted for most of Lear's \$7,368,000 in sales, increasing 82 percent over 1948. The Rover division's average monthly sales last year showed an increase of 153 percent over the previous year.

At the year end, Lear had a total of 1275 employees, compared with 558 for 1948. Research and development followed along several lines:

- **Lear-Cal** variable-control design group has developed a magnetic amplifier for military and commercial applications. Other projects include a power station control system for jet aircraft and a communication program for military radio equipment.

- **Rover division** is doing qualifying tests of newly designed transmissions and current vacuum pumps, transmissions being investigated up to 70,000 ft. altitudes. Two main transmission projects have been produced and approved.

- **Grand Rapids division** delivered two units of an automatic pilot including a new link for automatically bringing an airplane into an airport during bad weather. This research has been installed in an Air Force jet airplane and is a light bomber. The former installa-

tion is believed to be the first of its kind.

New product development at Rover includes a new line of ac, dc, and high frequency units, special systems for Rover pumps, gyro-compassing, chattering and locking actuators, new servitors, and modernized models of older type servitors.

Foreign Licensees Make British Engines

British advancements in turboprop design are paying off in licensing arrangements with foreign producers. Agreements are in force covering five turboprop engines and one piston engine.

Perit & Wiltshire holds license to produce the Rolls Royce Turboprop and Turboprop, rated at 6100 hp and 5900 hp, static thrust. The Turbo Wasp engine, based on the Nene, is the first turboprop to be approved for civil use in the United States.

The Argentine government is licensed to produce the Rolls Royce Turboprop and the Armstrong Siddeley Chieftain, a turboprop, piston-powered engine. Sweden holds license for the Bristol Siddeley Goblin and Ghost, and Fabrique Nationale, Belgian engineering company, is licensed to make the Denard.

PRODUCTION BRIEFING

- **Boeing Airplane Co.** has merged Seattle and Wichita engineering divisions to expedite interplant coordination. Harold W. Zipp became executive engineer under the new arrangement.

- **Chrysler** engineering, administration and sales activities for Wichita. George G. Martin has been named chief of the combined Seattle-Wichita B-47 Starjet project. Seattle engineering flight test facilities and operations are being concentrated on the northwest corner of Boeing field.

- **Lockheed Aircraft Services' Buick** has received a contract from Bell Aircraft for deliveries of 1906 C-46 emergency assembly parts.

- **Sole Aircraft Co.** San Diego, is completing addition of nearly 75,000 sq. ft. of covered area which will house plant and administrative offices total to 451,000 sq. ft.

- **William R. Wehrli** Co., Ltd., Los Angeles, has acquired entire capital stock of Sioux, Inc., makers of high pres-

sure heat control valves. William R. Wehrli became head of Sioux, L. S. Burkholder (former Sioux president) assumes as that organization in v.p. and general manager. The organization will continue to carry on separate production and sales operations.

- **Harbison Standard** division of United Aircraft has started production of 100 wind-tunnel blades for Cornell Aeronautical Laboratory, Buffalo, N. Y., and the Southern California Corporation Wind Tunnel, Pasadena, Calif. Blades are of solid aluminum alloy, seven feet in diameter. Each weighs more than 200 lb.

- **Glenn L. Martin Co.** has completed arrangements with Lucas Engineering Co., Ltd., London, to handle exclusive rights to Europe and other export territories of Martin's Matheson metal forming process. Complete process and equipment for manufacturing into casting process will be built by Lucas at the company's plant, Light Machine, Ltd., York, England.

- **The Thompson Co.**, Los Angeles, reveals that it has been granted patents on its Refracted Lightlight high temperature heat treatment method used for aircraft fuselage, wing, and turbine tip and turbine installation.

- **Hoffman Radio Corp.** has set up a new special appliances division at a new plant at 5405 South Grand Ave., Los Angeles, and will handle all military work in this 22,000 sq. ft. addition. Production of URC-1 equipment at a new mobile receiver-transmitter is scheduled to start this month.

- **Frank Anthony Avonco Co., Inc.**, Fairport, N. Y., has established a branch machine at Miami International Airport.

- **Jack & Helmut Precision Industries**, Cincinnati, estimates that 75 percent of its total volume of business is aircraft products, ranging from starter to power control systems. The company's aviation engineering department and research lab are occupying leased quarters formerly occupied by JACO, but which were sold to Universal Wire Spring Co. during 1949. JACO's net profit for the first quarter of this year was \$145,893. Net loss last year was \$170,791.

- **Tron Engineering & Manufacturing Co., Inc.**, Dallas, Tex., has received a USAF contract for maintenance equipment and overhaul of 60 additional Douglas C-54s, rising to 415 the number of this type overhauled by TENGCO for USAF and MAFS.

- **Wright Aeronautical Corp.** has received orders totaling about \$1 million for Cyclone engines to power North American T-38s, Grumman A-6s and Lockheed Constables. Deliveries will begin late this year.

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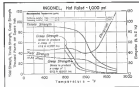
The extremely high temperatures generated within jet and gas-turbine power units are causing today's most challenging strength engineering problems.

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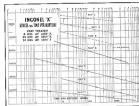
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AERONAUTICAL ENGINEERING

Transport Best Bet: Axial-Flow Jets

Turbojets now offer speed and simplicity; yet to come is cure for 'fuel hunger.'

By Wessley Boyd*

Why people want to go faster and faster, particularly when traveling by air, is anybody's guess. The fact remains, however, that there is a demand for speed on the part of the traveling public, provided they can travel fast in safety and comfort, and to achieve that end they are prepared to pay a premium for it. This desire is well illustrated by modern automobiles, premium ferries, and luxury trans-Atlantic liners.

If a panel of technical experts were to sit down and try to determine the best type of automobile for the general public, they would undoubtedly lay great emphasis on cheap transportation. Indeed, it is entirely likely that they would lay too great emphasis on this latter and somewhat emphatic on the other, until the balance scale in the panel's favor for speed, comfort, and economy tips.

The result would be that this panel would probably conclude that the car for the average American and Canadian would be a replica of the mid-range European auto. We all know that this is not true, since most cars have been improved very questionably as this country. In other words, what the average North American wants is an affordable car in comfort and even luxury, speed, economy, external showiness, etc., and he is quite willing to pay a substantial premium to obtain it.

The near-broke law of railway transportation Premiums for high-speed luxury trains was introduced on this continent some time ago, and was an immediate success. At the present time it is difficult to get a ticket on them because of the queue. Similarly, luxury trans-Atlantic liners are always booked to capacity, whereas, it is relatively easy to get a cheaper passage on a mailer liner, which is seldom in fact as luxurious.

All of this does not explain why the general public has spent but merely recovered the last by using a few well-known illustrations. Along with this,

the jet idea has caught the fancy of the public and, it being synonymous with speed, it is not hard to guess which aircraft the average traveler would choose to go from A to B if he were choosing between a turbojet transport and one of those old-fashioned things that use something about 1000 lb. of fuel.

Having recognized the desire of people to travel fast, the next thing to do is to try to establish just how fast the public is prepared to travel. The only answer again is to be a reflection of a previous statement—the public will travel just as fast as it can, provided it can do so with safety and comfort.

Thus, in considering air transportation after 1955, the speed ranges at different types of aircraft must be taken into consideration. In doing this, the true speed range must be clearly kept in mind, since this paper endeavors to establish the case for the turbojet in air transportation after 1955, that is, that is, in January, 1956, which is a little over 18 years hence now.

► **Crash-Speed Class—**Generally speaking, the cruising speeds of transport aircraft can be divided into three classes:

ones for the sake of this discussion—cruising speeds of 700 mph or better; 400 to 500 mph, and up to 400 mph.

It can quite easily be shown by technical arguments alone that no other form of aircraft can compete with the turbojet in the cruising speed category at 500 mph or better. However, for the purpose of this discussion and being in mind the true element, it is no respect, even if it were, there would be no decrease at all before dropping it, however, it is well to note that there already exists a long-range turbojet transport that cruises at about 700 mph and then it will not be possible to reach such performance the same in any dimensions as this subject which take place a few years hence.

In the cruising speed category between 400 and 500 mph the case for the turbojet is the strongest and the most important aircraft has the turbojet. Again it must be recognized that there exist two turbojet transports in this category—the one mechanical and a short-to-medium range unit, which cruises at 400 to 450 mph depending on conditions. While it cannot be argued that jet transports should be adopted now simply because they are available, the fact that they compare favorably as they, and which

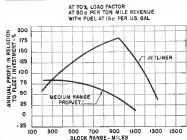


Fig. 1. Comparative cruising power of Aero Jetburn vs. medium range turbojet.

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are buying them, a certainly thought-provoking.

In the category of 400 mph, or less, the turboprop is considered for nonmilitary reasons which need not be further discussed. However, as a large number of transport aircraft will still be operating in this cruising speed range after 1955, it is here that the turboprop will have to "bottle it out" with the piston engine for supremacy in the transport field.

Phelon, Eugene Turboprop, propeller, that the public wants to travel fast, in safety and comfort—and this is important—and having taken full cognizance of the true demand involved as well as establishing three logical cruising speed categories, this paper now enters the field of the discussion as fully and completely described by two words: "with what."

Although it is doubted whether anyone has seriously considered the possibility of piston engine transports flying at cruising speeds of 400 mph, or better, it might be well to consider the subject briefly. The two most potent arguments against such aircraft concern the powerplant and passenger needs. Since there are no piston engines presently available of sufficient power to operate such a transport, it is unlikely that there ever will be, because it is a well known fact that turbine engines are required for achieving the extremely large development costs of such engines and it is doubtful if any such engines will be forthcoming in the future.

The conflict in piston engine transport, while satisfactory, if one doesn't know any better, is no match for that in turboprop and turboprop aircraft. Although it could conceivably be improved by better upholstery, better seats, more attractive external furnishings and greater stowage, these improvements would be more in the nature of remedies than cure since it's the engine noise and vibration which causes the trouble.

Turboprop Versus Turboprop transports can undoubtedly fly economically in the 400 to 500 mph cruising speed category and thus will be competing directly with the turboprop transport. Also, they are quiet and vibration-free, so the turboprop cannot claim an advantage in this respect.

However, in considering the position of the turboprop in the speed range, the first decision must not be forgotten. That is, an transportation after 1955 is the area at stake and thus the discussion revolves primarily around the advances and developments of the next 51 years. Although it is speculated that two turboprop transports are now flying, they are both short to medium range and have maximum cruising speeds of only 400 to 415 mph. This is somewhat better than existing piston

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advantages of the turboprop transport consequent upon engine improvements can be fully appreciated. These are shown in Table I.

In addition to the characteristics listed in Table I, both of these engines do not have very flat SFC vs thrust curves. While no disadvantages are noted with this characteristic, it is largely overcome by gradient partial engine operation, a flat SFC vs thrust curve is a great asset from the pilot's point of view, particularly during climbing, as flexibility in the choice of cruising speed at various altitudes is available with no deterioration in endurance and without resorting to engine shut downs.

Since the turboprop transport is not necessarily competitive with existing engines which, admittedly, have high fuel consumption, it is interesting to see what improvements will result from lower fuel consumption. In this respect the turboprop transport is in a class by itself, since it becomes a very all inclusive proposition when engines with say 12 percent lower fuel consumption are available. This is clearly illustrated in Fig. 3, where the improvement is compared to that of a turboprop transport.

Thus advantage of the turboprop transport, from the point of view of future development, is directly related to the fuel consumption of present day engines vs the fuel consumption of engines available in 1955. Thus the other large "thrust" of the present day engines may be almost looked upon as an asset in design because it has forced the designer of jet transports to really stretch their lungs to get the most out of them.

► **Commercial 50 Engines**—What kind of performance can engines that get engines as present, 1950? In this respect I am going to make two predictions, one for engines completely developed up to the point where they may be considered reliable commercial products, the other for development engines during a carbon removal or service life. One shows steps in very stark ground when one makes a prediction but it is a necessity to illustrate the great potential of the turboprop transport.

Table II lists the probable characteristics of completely developed turboprop engines in 1955. It will probably be assumed by jet enthusiasts that these predictions are unduly conservative and that a few words of explanation are in order.

In the first place, although large engines of the type indicated will be available earlier ones will also be available. But while they will have about the same SFC and overall life they will have progressively larger specific weights and thrust areas reaching about



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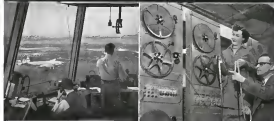


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In the second place a little satisfaction on the issue required to develop engines from the moment they first saw indication that it takes about 4 years of intensive work to get a really reliable engine. Thus, say engine that will make this stage in January, 1955, will have to be running now or by January, 1957, that is, within the next 20 months.

► **Overhaul Life Details**—The 1000-hr overhaul life looks like a tremendous achievement, but I will describe later the solid foundation on which this prediction is based. In my case, the significance of 1000-hr overhaul life is a jet engine should be thoroughly understood.

Since a turbojet transport will travel anywhere from 50 to 75 percent faster than a piston engine transport in every hour, this overhaul life is equivalent to 1500 to 1750 hr. for a piston engine. Furthermore, it is not thought that there will be major replacements during the first engine overhaul, because it is expected confidently that those will be limited to the main bearings, the fuel pumps, a few needle valve units and fueling blades, the scavenge blenders and perhaps the nozzle box liner.

The 2800-hr. overhaul is expected to be a complete engine rebuild and will include the replacement of all gaskets and bearings, blades, nozzle box liner, tailcone, etc. In other words, the majority of the working parts will be replaced. This will then put the engine in shape for another 1800 hr. with an overhaul at the midpoint. After that, that is, 4000 hr. total engine running (equivalent in miles to 4000/7000 hr. for a piston engine), it is expected that the second set of working parts will have been worn out and that the same oilings, etc., will have deteriorated to where the major engine will have to be replaced.

Engine maintenance between overhauls will probably be limited to fuel and oil filter changing, replacement of flame tubes in combustion chamber liners every 500 hr., replacement of some fuel and oil line hoses and cleaning sparkplugs every 100 hr.

► **Development '56 Engines**—When it talks engines as outlined in Table II are flying, development engines with somewhat better performance but lower life will probably be running on the test beds and flying experimentally both in and out of the service. It is expected that these engines will have the characteristics outlined in Table III.

So far, this paper has been concerned solely with pure jet engines, but for commercial use an adaptation of an attractive turboprop engine, namely the ducted fan or turbo-prop engine, might be

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The de Havilland Comet, a four-engine plane, is designed for a normal seating capacity of 38 and has the performance outlined in Table IV.

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Table V—Characteristic Performance of Avro Jetliner

Maximum gross weight	40,000 lb
Maximum length for taxiing	1,600 yards
Cruising speed	up to 465 mph
Normal cruising capacity	48 to 60 passengers

Possible Flights

(a) Montreal to New York	300 mi
Payload	11,000 lb
Block time	1 hr. 5 min.
Fuel reserves carried to permit	2 hr. flying +
(b) New York to Bermuda	400 mi
Payload	15,000 lb
Block time	1 hr. 12 min.
Fuel reserves carried to permit	2 hr. flying +
(c) New York to Miami	1,100 mi
Payload	17,000 lb
Block time	3 hr. 32 min.
Fuel reserves carried to permit	60 min. standing plus 118 mi. to aircraft.

Note: All of the above:
 (a) Include allowance for ground running, taking out take-off, climb, descent, 7 min. maximum time to landing and turning on.
 (b) Cruising and other performance figures have been substantiated by actual flight tests.

The Avro Jetliner, a short-to-medium range craft, is designed for a maximum seating capacity of 60 and has the performance outlined in Fig. 1 and Table V.

• **Low vs. Conventional**—It will be noted that both of these craft have one thing in common—they both use centrifugal engines. This is natural, since, with the exception of the U. S., there is no country which has had a real jet engine running for a sufficient period of time to develop them to the state of reliability required for commercial work. I am convinced, however, that the real flow engine will gradually replace centrifugal engines for transport. The reason for this are twofold.

First, the axial engine is potentially more efficient than the centrifugal, and now at the present time is achieving fuel consumption substantially below that of the best centrifugal engines. Secondly, the smaller diameter of the axial engine will show up to advantage in the way in "good" type certification that will undoubtedly be required in future transport aircraft.

The second reason is a matter of timing. In the case of the turbojet, from post after 1955. However, it might be expected to make a quick review of the increasing by showing some can choose. They are:

- The public is always demanding speed combined with safety and low cost.
- The jet idea has caught the public

imagination and is considered synonymous with speed.

- Two jet transports—one long range and one short to medium range—already flying.

- Airlines are already buying jet transport. In particular, one Canadian airline has ordered two of them.

- Airlines are commencing to adopt jet transports for premium line routes and keep them booked to capacity.

- The present "cost per ton-mile" basis for comparing the relative economy of aircraft with large differences in block speed is obsolete.

- Operation of jet transports will prove the industry's claim that they can economically outperform any of their slower speed rivals on many of the existing "hard and better" routes.

- Turbojet transports tend to give consumers from faster replacements in engine economy.

- The engine presently used in jet transports already have reliability and overhaul lives comparable to around eight good piston engines judged on a mileage basis.

- The present development of jet engines indicates that in 1956 engines with at least 12 percent lower fuel consumption and 1960 jet between overhaul will be available.



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Study in Miniature

The behavior of aircraft during takeoff is studied from within it being studied by engineers at the Douglas Aircraft Co. plant in El Segundo, Calif.

Studies are being carried out with the aid of a miniature launching device which originally model airplanes. These scale are built to exact scale and weighted to give the same moment of inertia and scale-weight ratio as a full size plane.

Launchings are photographed by high speed cameras to give a complete record of the plane's behavior at every stage of takeoff. Douglas test findings from these tests are helping in the development of improved outboard devices and techniques.

When to Retread

A wide variation of opinion exists among airlines relative to the length of time a tire may safely be kept in service, and the number of times it may be retread.

Most companies limit the number of retreads to two, although some allow as many as five and leave the decision whether the aircraft is worth retreading up to the retreading company.

At least one airline places a limit on tires on the number of retreads.



Tantalum Capacitor

A new electrolytic capacitor, reported to be particularly suitable for electronic applications where lightweight coupled with high performance are the major considerations, has been developed by the General Electric Co., Schenectady, N. Y.

It is a 1 microfarad, 150 v. d.c. Tantalum capacitor. GR says the unit is 90 percent smaller than paper capacitors and promises to have a much longer life than aluminum electrolytic types. Development of the new capacitor was hampered through use of tantalum in both form and a new non-aqueous electrolyte.

Other advantages claimed for this hermetically sealed unit are longer shelf life, greater stability, lower leakage currents and improved low temperature characteristics.

AVIONICS

'Miniature Omnirange' Helps AA

Aircraft Radio Corp.'s portable H-14 Signal Generator permits ground check of aircraft omni equipment.

The lack of fixed omni-range stations in the New York area has posed a difficult problem in checking operation of omni equipment in this aircraft flying away from that point, even if stations were nearby, radio interference and congested traffic make New York the best place to test equipment in flight.

■ **Aircraft's Answer**—American Airlines now has found a solution to the dilemma—no test for itself. It is a "miniature omnirange" called the H-14 Signal Generator. One of these "products" was developed recently by Aircraft Radio Corp., Boston, N. J. American obtained two of them several weeks ago at a cost of \$553 each.

One at LaGuardia Airport, the other at Dulles. The owner uses the New York set to ground check omni equipment in aircraft before departure.

The test set is currently preset for a 320-150 deg. arc. As the omni selector in the plane is rotated to the 360-deg. position, the "To From" indicator moves to the "to" position and the "left-right" indicator circles. Minimum deflection of the "left-right" indicator needle is observed at the 90 and 270 deg. positions on the omni selector. An LED display is superimposed on the selector, the "to from" indicator moves to "from" and the "left-right" needle comes back to center.

■ **Bench Work**—In addition to its ability to check out a small area on the track, the unit will check the phase inductor on left-right and right and provides a means of omni calibration for trouble-shooting on the bench. As the way, the tone is a useful aid in setting minor repair on equipment. Omni modulation also permits checks on the tone set itself. The unit also permits voice transmission to the airplane.

The set, as it is being used by American, gives a single tone check of the omni circuit as accurate as could be obtained in actual flight. And ground checks with the miniature omni-range offer advantages over flight testing. If desired, the set may be overhauled, adjusted to check out the aircraft even over 360 degrees of azimuth at 50 deg. intervals, the equivalent of testing on the distant omni.

A check as thorough as the world

likely be practical in flight, since the airplane would have to fly a complete circle around the omni station to get the same results.

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next order. For this reason, that carrier showed a loss of \$149,977 for last year. By the same token, TWA's international routes would have shown a greater return than they did if such antiquated routes were retained.

A very important factor in Pan American's outlook is the proposed acquisition of AGA, now awaiting final determination by CAB and the President. This acquisition, if approved, will of course strengthen the company's position in the trans-Atlantic services. Pan American attributes its trans-Atlantic traffic decline from 10.5 percent in 1947 to 25.5 percent in 1949 to the expansion of services of state-owned foreign flag airlines.

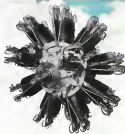
► Stratospheric Factor—The initial high operating costs of the Stratosaurus receive special mention in the report. It was undoubtedly a factor in the higher expenses experienced last year. The necessity of taking individual seats out of service from test to test for modification and test contributed to low utilization. The company pointed along to Boeing, Civil Aeronautics Administration and other users of this type aircraft the benefits of improvements it offered.

Pan American has adequate financial accommodations to handle its immediate requirements. On Sept. 30, 1949, a new \$50-million loan was stated by credit agreement was arranged with a group of 34 banks in 15 countries. This arrangement provides for a maximum of \$100 million in 1950, providing the company with funds of \$40 million, carried in interest rate of only 14 percent.

► Reserved for AGA—The current loan was drawn on to the extent of \$40 million by Dec. 31, 1949. The additional available credit of \$60 million is retained to the proposed acquisition of AGA. On this amount, \$10 million was drawn down on Mar. 31, 1950, with the proceeds invested in U. S. government bonds. The remaining \$50 million may be borrowed only if the AGA acquisition is consummated on or before Sept. 30, 1950. If the AGA deal is not approved, the \$10 million is repayable immediately.

As of Dec. 31, 1949, Pan American showed net working capital of more than \$20 million in against \$11.7 million a year earlier. However, at the most recent year-end, there was outstanding a long-term debt of \$75 million compared to only \$35 million at the close of 1948. Also, included in current liabilities at the 1949 year-end were notes payable of \$10 million. This amount was paid \$5 million in 1949.

—Eugene Altschul



1921

Alcoa Aluminum was right for America's first radials

Aircraft progress kept ahead when the Lawrence flycylinder radial engines passed its Navy acceptance test only in 1921. For the first time, America had a fully satisfactory, air-cooled engine of more than 100 hp. With few basic changes, the Lawrence engine was developed into the famous Wright "Whirlwind"—designed to power a long series of record-breaking flights. In all these first radials, Alcoa Aluminum's light weight and rapid heat conductivity made it the choice for cylinder heads, pistons and crossheads.

1950



Alcoa pioneers again with larger Aluminum Plate

Airframe fabrication has come a long way since aluminum became the leading light material. New shop methods. New design tricks. New forms of aluminum, too. For instance, Alcoa recently made available aircraft plate in greater widths up to 118", longer lengths up to 39' and a weight per plate up to 4,000 pounds—opening the way to lower costs, higher performance.

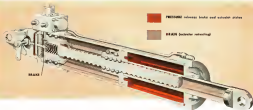
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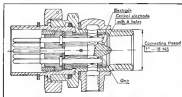
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NEW AVIATION PRODUCTS



SECTIONAL VIEW of SAAB's new device for spotting engine failure and...



DETECTOR ready to be put in engine.



PANEL holds output warning lights.

Device Warns of Engine Failure

SAAB's improved magnetic sump plug gives early warning of backflow; bank of lights indicates seriousness.

The principle of the outgauge sump plug as an engine failure indicator has been developed by Svenska Aeroplan AB of Sweden in a new device that can detect an incipient engine backflow in flight as soon as disintegration commences.

The device consists of a sump plug, mounting a vibratory electrode with an holes grouped symmetrically around the periphery. Six magnetic electrodes partly obstruct these holes so fuel oil may pass through freely, but any rapid particles in the oil would be caught, since the current between the two electrodes and disintegrate a warning light to the cockpit.

► **Chip Detector**—A basically similar device, called a "chip detector," has been said by at least one U. S. engine manufacturer for the last two years. Its application, however, has been exclusively for test units—at first on new or

rebuild engines while being run-in on the bench, and later in flight test engines.

T. Gary of Curtiss Wright stated that the chip detector has not been installed as engines sold to the airlines because few chips, whose presence was not necessarily indicative of engine failure, would tend to accumulate in the unit, causing it to give no alarm and thus creating a definite psychological hazard for the pilot.

A new version of this detector is undergoing service test. The unit must allow oil to flow, without any false alarms. It incorporates a type of sump plug chamber which will collect fine, insignificant metal particles and will register as alarm only when present in sufficient magnitude to indicate engine failure, not through it.

► **Swedish Way**—The Swedish unit in response to warning lights for each

engine, mounted on the instrument panel. The pilot can judge by the number of lamps lit and the regularity of their lighting sequence just how serious a failure is. This will make it easier for him to decide on proper corrective action.

The detector housing is ruggedly built and is designed to replace current sump plugs. On the present model a 1-in. 18-8 SS thread is used, fitting Svenska's Pratt & Whitney R-1330 E-11 engines.

The electrical connections have been designed to permit rapid connection or disconnection, to expedite trouble shooting.

The plug was designed to comply as possible to provide guaranteeing not function within the wet shell and resultant false alarms. Absence of warning parts should contribute materially towards this end. To avoid electrically through the oil, alternating current is supplied to the electrodes.

The primary advantage of this type of detector is its apparent ability, despite low cost and design simplicity, to detect an engine failure at inception, allowing the pilot sufficient time to shut down the engine before major damage occurs.

Regulated Power

PSR 100 electronically regulated power supply unit, marketed by American Electronic Corp., 2112 South La Brea Ave., Los Angeles 44, Calif., is designed for use by research and development laboratories working with aircraft radar, radio, sound equipment, guided missiles and other activities.

Power regulation with this unit is achieved by response to be "tuned" as good as that available in any computer power supply. Regulation is 4 of 1 percent for line output voltage from 50 to 500 v d.c. under any load conditions from 5 to 300 milliamperes, and any line voltage variations from 115 to 125 v a.c.

Major state fully temperature over compensation is not any of sufficient and is using to assure good regulation, minimum ambient temperature rise (30 degrees), maximum ripple, and long continuous-duty life.

Oil condensers are used throughout except where high capacity requirements prohibit their use because of size limitations. Where electrolytic capacitors are used they are de-rated to provide extra margin for safety runs. All capacitors are de-rated.

Panel type unit with enclosed cabinet is designed to mount vertically on standard rack rail, or to be used on bench. Fixed panel measures 19 x 12 1/2 x 3 1/2 in. Dimensions of unit including panel are 17 1/2 x 16 x 12 in. Device weighs about 14 1/2 lb.



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Pressure Transmitter

Polysiloxane electronic transmitter, "developed to meet... demand for high pressure transducers in conjunction with medical research and related applications specifically in the aerospace industry," is offered by Frederick Haerel, Inc., N. Tarrytown, N. Y.

Unit is designed for use with common mediums such as oil, fuming nitric acid. It incorporates base which 360-ohm bonded strain gages arranged in a Wheatstone bridge circuit and is available in ranges from 100 to 5000 psi. Powered by movement of 10v, maximum resistance full scale output of 50 millivolts open circuit. Output is linear with pressure and its repeatability is better than 1 percent of full scale.

Device is fully temperature compensated for zero shift and sensitivity changes with temperature. Zero shift will not exceed .01 percent of full scale per degree F change. Undamped rate of frequency of transmitter is over 1000 cps, depending on range.

Unit has 1 1/2 in. height and 1 1/2 in. diameter. Weight is about 30 oz. It is manufactured under Federal AEC nuclear grade license.



Navigation Aid

Lightplex navigation instrument, made by Genes Silt Co., Urbana, Ohio, automatically converts time to

distance. Pilot simply sets minimum ground speed, sets instrument and starts in position timer which starts according pilot's mileage.

Called the "Navigator," instrument is used in conjunction with Genes navigation tape. Pilot may read direct from instrument face the number of miles he has flown. He then refers to chart and the navigation tape marking his course. The transparent tape also is marked off in miles and is designed to show his position at a glance. Ground speed can be determined and readily corrected after one or two clock points. Instrument adjusts for speeds ranging from 45 to 240 mph and navigation tape is available for both Sectional and World Charts.

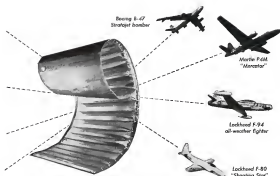
Genes expresses any new instrument particularly valuable when flying over unfamiliar terrain or when instrument visibility prevails. Unit can be mounted on instrument panel, but does not have to be converted into aircraft systems in any way.



Temperature Sensor

Resistive wire, temperature sensing element, offered by Barco Cabana Co., Rockford, Ill., is designed for use in high velocity aircraft engine tests. The unit measures several wire elements, all enclosed to give maximum protection with maximum surface of sensitive response.

Enclosure is pressure tight and fixed with standard AN connectors. Meter may measure temperature response, approaching that of bare wire, or, in case, is obtained through using contact by trace element and enclosure which are separated by wax sealant. Standard wire has circular mounting flange, but special mounting details can be supplied by the manufacturer.



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SALES & SERVICE

Air Taxi Network Plans Go Ahead

Membership in group is now 32 local operators; 100 expected by July 1, scheduled opening date

- The proposed national network of air taxi operators, to provide integrated special plane services between major terminals and off-airport airports in smaller cities, is scheduled for operation July 1.
- Plans are now being completed by the Air Taxi Conference and the Air Traffic Conference of America. About 100 operators will be enrolled in the system by the summer's end, with 12 already in, according to Joseph Gaudin, head of Wiggins Airways, Newswold, Miss., who is president of the Air Taxi Conference. Operators are still needed in California, Texas, and the Pacific Northwest.
- **Airline Approval**—Airline approval for the system was given in general terms at a recent Air Traffic Conference meeting at Miami. Next step is signature of interline agreements between the airlines and the operators. It is expected that the conference may be given blanket power to act for all the airlines in the agreement.
 - **Network Plans**—Among the two networks a plan:
 - A leading company to bond over participating operators for \$1000 to the airlines, to secure the proper handling of airline ticket funds.
 - Operators will make airline connections from their off-airport bases closest to the nearest major airline terminal city by collect telephone calls.
 - The operators will accept collect telephone calls from the airlines in nearby cities for air taxi connections.
 - Scheduled air taxi rates are expected to be established. Analysis of rates proposed by the operator members already signed shows average around 10-12 cents/mile for a two-place air taxi flight and 15-18 cents/mile for a four-place.
 - Examination of operators by the leading company to verify that they are meeting the proposed requirements as to equipment, pilots, responsibility, etc.
 - A \$30 exchange order will be sold by the airline to airline patrons desiring to order air taxi connections. It will be refundable as air taxi fee, but not subject to refund unless the flight is cancelled by weather or schedule of the operator to perform. This arrangement has been planned to protect the air taxi operators against "no show" patrons.
 - **Personal Aircraft Council of America** Inductees have agreed to provide 90,000 pamphlets advertising the air taxi service, for distribution to patrons by the airlines.
 - "Flying Knapwax" slogan, "For Short Hops," is being designed for postcard advertising, and to be displayed in air taxi planes.



SUPER NAVION IN FLIGHT

First flight photo of Rock's new Navion Super 260 executive plane, powered with a Lycoming GO-495 C2 engine developing 260 hp for take-off, shows the additional length of the nose, resulting from the bigger powerplant. Price is priced at \$13,995. It may San Diego. Performance expected as class 170-mph cruising speed, 1750 ft/min rate of climb, 4000 ft/min climb and 980 mph, absolute cruising range at economy cruise settings. AE Sports are at 2500 lb. full gross weight in air with one pilot. Super Navion is first plane constructed with the new General Leaning engine which turns 2400 cubic cm for take-off, with the powerplant having only 1050 rpm. For Rock, the Super Navion is designed, powered, equipped 182 mph in a two-seater San Diego to El Paso flight using 12.7 gal fuel with one of the new 270s.

played in an air taxi plane.

First listing of the air taxi operators who have already obtained with the conference and indicated their intention of beginning operations July 1 will be shown in the next issue of *Airline Guide*, sent to be off the press.

Plans for a paid executive director of the organization are still tentative and will depend largely on the additional involvement of operators into the Air Taxi Conference.

BRIEFING FOR DEALERS AND DISTRIBUTORS

- **WINDSHIELD WIPERS NOTE**—Operators are advised by Flight Safety Foundation to notice that insurance against cleaning plane windshields during an emergency after landing. Recent tests revealed that water droplets were generated while cleaning certain types of plastic windshields.
- **FELTING AMBULANCES**—At least 1000 ambulances are being used as ambulances, according to a CAA survey being prepared for release soon. Included will be a complete listing of the places and their size, make, location, etc. CAA plans to make this listing available to doctors and hospitals.
- **BUSINESS PLANE UPREND**—Shell Oil Co.'s Hugh Harvey notes that business use of private planes has declined four-fold in the last three years, with only 32,000 still being utilized. Last year they flew a half-million more hours than all commercial planes. About 8000 are being used by corporations, and about 4000 by wealthy individuals for hunting, spring, fishing and vacation.
- **FLOTROP-BECHEROBY DEAL**—Boch Aircraft has granted Flotrap Manufacturing Co. exclusive rights to make, sell and service the B052 and B053 series Boch-Roby convertible pitch props for small planes. Flotrap is incorporating its Armor Control blade into the Boch prop. The Grand Rapids, Mich., manufacturer has already set up a factory service plan to cover the new addition to its line.
- **CAA EXAMINER REPS**—In order to provide better service to the industry, CAA has revised its designated pilot examiner program, whereby designated pilots of the government agency in group flight tests to aspiring pilots. Designations will be made for 10 hours for one year, with no credit for excess of authority will be awarded to each year, and the pilot's certificate will last as long as the CAA criteria officer under which the designations operate. Under the new system CAA will be able to re-evaluate more accurately records on the designees and keep them posted more frequently on their status.

AIR TRANSPORT

Pilot Employment and Wages

(16 Domestic Trunklines)

	1989		1988		1987		1986	
Carrier	No. Pilots	Avg. Salary	No. Pilots	Avg. Salary	No. Pilots	Avg. Salary	No. Pilots	Avg. Salary
American	725	\$9279	723	\$8954	715	\$8189	8177	\$9595
Delta	412	8719	399	8949	382	7991	596	\$6779
Capital	308	8314	300	7919	237	7189	340	8280
Ch 8 & 9	315	9879	310	7284	149	4394	144	5289
Continental	44	7974	55	4914	42	4494	34	3914
Eastern	82	7714	97	4414	48	4249	82	5314
Delta	334	7564	305	7387	266	7277	266	6589
Eastern	712	8649	708	8992	713	7493	715	9512
Eastern	148	7414	146	7341	22	4312	30	5539
Midwest	229	9461	117	6499	99	6219	90	5649
National	972	7774	944	1349	139	7454	149	8249
Northeast	89	7319	49	6614	44	6914	44	5744
Northwest	91	8949	94	7399	79	6417	79	6249
TWA	718	8155	678	7295	319	7193	791	4244
United	719	8697	734	7414	446	6249	966	6129
Western	139	8362	95	8914	97	7499	118	5974
	6712	\$8239*	6613	\$7795*	4753	\$6354*	5414	\$8094*

Figures for 1989, 1988 and 1987 are for fourth quarter of each year. 1986 figure is for December only.

* Average are approximate. (Pilots and co-pilots included in composite).

ALPA-Airline Talks Near Climax

Faster, more productive transports enlarge job security, pilots feel; management worried over 'featherbedding.'

By Charles Adams

A showdown is approaching as the long-ventured, hard-fought bargaining negotiations between the Air Line Pilots Assn. and airline management.

ALPA has spread its technological unemployment among its members.

Airline management is worried about the specter of featherbedding.

Large, faster and far more productive transport planes are lowering the demand for cockpit personnel despite the growing in airline traffic. As a result, ALPA the one is making its biggest pitch on the issue of job security, although it demands higher wages also.

Four Pilots—Number of pilots and co-pilots on the 16 domestic trunklines fell from 5014 at the end of 1986 to 4753 during fourth-quarter 1989. During the same period, revenue ton miles flown by the carriers increased more than 23 percent.

(It should be noted that the 1986 pilot total represents an artificial peak.

Many pilots then on company rolls were in training and had been hired on anticipation of sustained traffic which failed to develop.)

With the domestic trunklines showing more than 526 million operating profit last year and getting off to a good start in 1990, ALPA figures the industry can well afford to spread the pilot work to provide some employment at higher rates.

Management, on the other hand, says that last year's earnings did little more than balance the heavy deficits incurred in 1986 and 1987. Airline officials contend that the real "bargaining man" of the industry are not the pilots, whose wages have gone up steadily in recent years, but the stockholders, who, with few exceptions, haven't assumed any dividends on their investments since 1946.

Contract Open—ALPA employment agreements with about 15 airlines are now open for revision. But the pact with American Airlines, expiring last July, is regarded as the key agreement

around which a new industry pattern may be set.

After months of anxious management peering, the National Mediation Board was called into the ALPA bargaining negotiations last December. With no agreement in sight, ALPA now regards the situation as "bore."

As in the industry generally, American now has fewer pilots and co-pilots than it had several years ago. But despite the reduction in numbers from 5177 in December, 1986, to 736 in fourth-quarter 1989, pilot salaries represented about 16 percent of the carrier's payroll and over 7 percent of its total operating expenses during both periods.

In December, 1986, pilots and co-pilots composed more than 8 percent of American's total personnel. By the end of last year, the proportion was less than 6.5 percent.

Top Wages Paid—In talking American for a contract which may set an industry pattern, ALPA is hitting on not only the largest domestic carrier, but also the line carrying the highest average salary to pilots and co-pilots. AA's average annual pilot-co-pilot wage at fourth-quarter 1989 was \$8279, compared with \$6954 in 1986, \$5149 in 1985, and \$3928 in December, 1984.

As ALPA says it, while Comair-Delta's pilots (as they have on

American), productivity is tripled because of the newer planes' higher speed and greater payload capacity. A DC-6 or Constellation produces at least five times as many ton-miles per hour as a DC-3, but, the union argues, the number of pilots required remains the same. David L. Belenick, ALPA president, explains that maintenance of a sufficient pool of competent and experienced airline pilots is of prime importance to national defense and one of the main pretexts for airline unionism. "You can't stockpile pilots like you can planes, ships or guns," Belenick points out. Then, he contends, the decline in pilot employment may prove a major calamity.

Merge Limitations—While both sides are close-minded on details of their negotiations, it is known that the major issue of the American ALPA discussion is the union's demand for limitations on the number of pilot slots can be by such means. Management would vary according to congested need. But in any case, cockpit personnel would probably reach their monthly mileage limitation considerably below that has accumulated their maximum 45 hr of flying time—possibly at 65 hr.

ALPA has wanted a limit on monthly mileage ever since the National Labor Board set up the pilots' lease pay structure in 1974. The union took a monthly mileage restriction in a "must," now that jet transports are in the skies. ALPA thinks the 35 hr flight time limit should be cut to 75 hr at least.

On-Duty Restrictions—Pilots also want an "on-duty" time limit and adequate pay for work on the ground. They complain that they spend the best and most unproductive years of their lives filing out reports, entering weather information and just waiting before flight.

Management contends that pilots' base pay (which captures most in addition to hourly pay and mileage pay) compensates them for on-duty ground time.

Airline expenses are now paid according to a formula which takes position: higher weight and speed add considerations. Then American's hourly pay scale for first pilots is divided into three brackets. Pilots certified for minimum gross weight through 50,000 lb, from 50,000 through 120,000 lb, and 120,000 through 150,000 lb. Each of the brackets is further sub-



Baltimore's Bargain Airport

Baltimore's new 3700-acre, baggiest-once Friendship International Airport (shown) is being spread out for its early opening. At a cost of only \$115 million (the federal government loaned \$3 million), Baltimore has a field which is three to five times larger than Washington National and four times bigger than LaGuardia.

Friendship, mid-accessible for a hub airport (New York International, 4600 acres, already has cost upwards of \$100 million)—is a lot to its site. No fill was required and huge earth-moving machinery could be used.

An estimator among law was enacted to keep the airport's approach clear. Construction is regulated within a 32-

ing m. acre. No structure or power line higher than 200 ft above sea level can be built within four miles of the runway. As a result, Friendship has the unusual field ratio of 93 to 1.

Interstate runway (center) is 9150 ft long and 208 ft wide. Two other runways are finished, and their more can be built. The new airfield administration building is 110 ft high. Three spots in the main and a service building, both 175,000 sq ft. For stop-over passengers there are 25 restaurants with showers, dressing rooms and beds. There is a dining room and cocktail bar. Low-cost time from the field is 15 min to Washington, 13 min to Baltimore, and 25 min to Annapolis.

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Right: Pilots and co-pilots. Left: American Airlines. Right: American Airlines. Right: American Airlines.

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drifted into seven to nine speed categories, with both day and night pay increasing in scheduled block-to-block speed runs.)

► **Other Demands**—The pilots want increases in current base, hourly and overtime pay as that cuts with industry limitations they would have received take home wages. They also ask double-backing and inventory pay, more (flex) vacations and sick leave, and higher allowances for meals on, away from the home base.

Cap pilots present a special problem: ALPA believes they should not only receive higher base pay but also savings and hourly pay for the captain.

Since power with ALPA is the stopper in negotiations for cap pilots, until the goal is practically a permanent job. The union says entry captains have been demoted to co-pilot status, while co-pilots at the bottom of the seniority list have been laid off.

Former first pilots must again accept to captain's status before any of the right co-pilots leave a carrier for production or captaincy. With some airlines having co-pilots of up to five years' standing, ALPA has higher pay is necessary to compensate for the limited chance of advancement.

► **Retirement Issues**—Pensions, a major bargaining issue in other industries this year, have not figured importantly in

ALPA demands. The union's membership reportedly is divided over the need for new retirement programs, equity pilots having investments in securities.

ALPA, which has a maximum monthly wage guarantee for captains in its agreement with United Air Lines, was a similar setup in contracts with American and other carriers. The United pact also has a provision whereby first pilots receive a 1000 increase in the flyaway portion of their monthly guarantee when they fly new type equipment which has been used by UAL less than a year.

One reported ALPA-volunteer which might actually affect the budget is a demand for additional pay for landings made in excess of a set maximum per month. Pilots feel that because landings and takeoffs are the most dangerous portions of any flight, extra compensation should be given where there is a disproportionate high number.

Feeder Seeks Lower Pilot Pay Scale

The Air Line Pilots Assn., which is after big gains in its current contract talks with American Airlines and other trunk operators, thinks it is being edged in the back by the industry's smaller fry.

Nel West Airlines, a certificated feeder among light planes, has asked the Civil Aeronautics Board for a special exemption to pay its pilots less than the current legal minimum wage. The move irritates ALPA because it feels, at such airports are granted, they would lose a far-reaching effect on all current airline contracts and those which may be negotiated in the future.

► **Special Scale**—Proposed-Specifically, MWA wants to pay the 3-1 pilot cap team of its single-engine Cessna 190s a minimum of \$300 during the first three months of service, and \$475 thereafter. This would cover the first 70 hr. of flight time per month, with additional hours (at the 55-hr limit) to be paid for at the rate of 1/7th of the minimum monthly rate.

MWA President T. C. Anderson thinks payment of the special scale would obstruct his company's development and possibly prevent it from containing operations. He says the lower rate would not affect safety.

Mel West's low package Cessna operates only during daylight hours over flat terrain, which, the company feels, presents no operational problems for light personnel. The carrier thinks it is illegal that the Cessna, with its 140-hp engine and 167 mph. block-to-block speed, should request the same pilot

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ply only in a 21-passenger DC-3.

► **Schedule Problem**—Average monthly rebookings from by SWA pilots is \$100—substantially less than the total fees by pilots of other airlines and airlines which operate aircraft of greater speed and capacity but the schedule losses American says that if Mid West were to pay the same pilot wage regard of other carriers by the Civil Aeronautics Act, then the rest will have to be passed on to the government in the form of increased fuel subsidies.

Mid West didn't start scheduled service until last Oct. 31. But the company's pilots during the last quarter of 1949 were paid a rate equivalent to \$7215 outside.

The \$7117 rate considerably more than the average of about \$6000 usually paid by such airlines as All America, Moench, Piedmont, Robinson and West Coast to pilots and co-pilots of their DC-3s. It is also about the average pilot pay rate of several airlines, including Chicago & Southwestern, Delta, Mid-Continent and Northwest.

► **ALPA View**—A request similar to

Mid West's was made to CAB last summer by an applicant for lightplane routes in Texas. No decision has been reached on the case, and ALPA is fighting the application. The union says it "scarcely questions the advisability of extending the lives and property of the public to airline pilots whose salaries increased at rates disproportionate to the \$375 to \$500 monthly (as voted by the Texas carrier)."

ALPA has always opposed single engine airline operations as a matter of principle. The union is using its veto to prevent any more such certificate holders. Further, ALPA is fighting present CAB proposals to transfer pilots from its airline routes to those of the feeder.

At least one other feeder using lightplanes reportedly feels that new routes now specified in the Civil Aeronautics Act are out of proportion to the duties and responsibilities of pilots flying lightplanes. But another carrier in the same category believes strongly that the present trend would not counterbalance the effect of the wage reduction on the pilots' morale.

Havana ICAO Meet

Nearly 200 delegates to the second Caribbean regional air migration meeting of the International Civil Aviation Organization have completed a three week session in Havana. Represented were 37 member states, 6 non member states, and 7 international organizations. Elected president of the conference was Mario Terra Mena, one of Cuba's oldest pilots and head of that country's delegation.

Main topics discussed in detail included new airports to be built in the Caribbean area; services to be organized; communications to be improved; methods of controlling air traffic in the area; requirements of meteorological and other services; and the extent of contributions to be made by member states.

A plan was drafted for distribution of air migration frequencies in the Caribbean, North American and Atlantic regions. Even would be the detailed plan adopted at the International Radio Communications Conference, October, 1949.



Saunders-Roe Plans Duchess Turbojet Flying Boat

(McGraw-Hill World News)

London—Duchess is making its debut as commercial jet liner in official service.

► **Characteristics**—The Saunders-Roe Duchess is designed to cruise at 590 mph in a ship length of about 190 ft. Using the standard method for assessing costs developed by the Society of British Aircraft Constructors, cost per passenger mile of the plane is calculated at just over .01 cents for stage lengths of 1900-1950 mi. Cost per ton-

mile New Zealand run. Duchess now uses Short Solent boats as this route.

► **Characteristics**—The Saunders-Roe Duchess is designed to cruise at 590 mph in a ship length of about 190 ft. Using the standard method for assessing costs developed by the Society of British Aircraft Constructors, cost per passenger mile of the plane is calculated at just over .01 cents for stage lengths of 1900-1950 mi. Cost per ton-

mile is figured out at just over 14 cents per ton mile for the same stage length, and 21 cents for 1950 mi.

Gross weight of the plane is 110,000 lb., with max gross being 135 ft. 6 in., and length 124 ft. 6 in. Passenger accommodations will be increased.

Capt. E. D. Clarke, Saunders-Roe managing director is now in New Zealand taking the Duchess over with Tasman Empire Airways officials who are interested in plans to quicken routes.

STRICTLY PERSONAL

HOW TO IMPROVE PASSENGER MIDDLE—Thomas Wilson Sheridan, 34, has not been in prison in 15 years to tell us his latest take on the Sherwood tale. The sky jockey, musician, and a passenger spoke to Sade as she came back from the cockpit. "How's the weather down?" Sade replied lightly. "Oh, it's good. The pilot and he could see me back down."

CONNOR IS MISSING: This column's anonymous, well-matched ability to find lost persons gives most attention. Now we are asked to broadcast a call for the present whereabouts of **Harry F. Connor**, who was navigator for **J. Earl Boyd**, pilot of the second trans-Atlantic flight of the *Bellanca monoplane*. Connor, and later was navigator for **Harold Hughes** on his record-breaking world flight. **Ed Schneider**, aviation photographer of Rahway, N. J., made out this SOS. One of our readers knew where Connor is.

VON FLUGEN'S HONOR—We have always known that periodic scientific studies to find where restaurants are polluted in that column. The distinguished Dr. H. A. Von Flugen reports he has been awarded the special degree M.D., a recognition of his continuing work on oscillatory motion presented to the scientific world through the department. In a postscript, Herr Doktor declares that he is at work on a new part of the Civil Air Regulations Part 214Q. He intends to make the section more convincing and emphasize that it is already, but confidence that a proving extremely difficult.

NOT HOW FAR, HOW WELL!—That outstanding aviation character, Bob Schuch, of Tuxedo Airport, has a new official patcher post card which we share with you and he

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many friends valley. It is sandwiched in between these two horizons. The valley margins, mechanical are also below an additional younger zone of Bell's natural thickness. (Don't a

A MIFERDAN ANECDOTE—"At Dallas," wrote Hy Sheridan, "as airline customs agents are standing by the platform railing, surrounded by what are systematically known as baggage-men, watching the transports coming and going. One of the approaching vehicles beaked vertically around the field, pulled up into a wingtail, tilted into a landing, and came to a screeching stop at the gate."

"He certainly is," the Oya Managers said with some heat, "he goes around with his jacket unbuttoned."

OUR OWN 'SISTA' GETS PUBLICITY—It was only a few weeks back that the columns crissled Rindler's Depot with ads of one type. We've just learned that one of these was the product of an "anonymous" writer at the Atlanta-based *Black Caucus* on "The Weekly Succession in the Kentucky KKK of Lexington, Ky. Rindler said, "All of the information included was properly obtained on the members of the group and the McGowan/BBT incident," emphasizing a few more points. All that, he says, the name of Henry Lefeb, editor in charge of editorial malaprop. His name appeared typewritten.

E. H. W.

WHAT'S NEW

New Literature

Airline executives and students of air transportation will find the 11th edition of *Air Transport Facts and Figures* a handy reference for checking scheduled airline operations for 1995. Comprehensive data compiled from the Air Transport Association covers traffic, safety, financial, air mail, personnel, phone obligations, airports, etc. ATA president Emory Scott Land has written a foreword. Write: Air Transport Assn. of America, 1187 16th St., N.W., Washington 6, D. C.

Engineers can now obtain a subject index to technical documents in Vol. II of the Bibliography of Scientific and Industrial Reports, Jan.-June, 1948, issued by the U. S. Dept. of Commerce, Office of Technical Services, Washington 25, D. C. (Price \$1).

Metallurgists and scientific workers will find *Exhibitions Data for the Alloys* an authoritative reference on incorporating binary metallic systems, with some important systems presented in diagram form. Write to The Research Institute, Inc., 402 W. 6th Ave., Columbus 1, Ohio, for price \$0 cents postpaid.

Manual on Foreign Testing by American Society for Testing Materials is designed as a guide to those entering new or intensive facilities, to aid in understanding requirements, and to advise on proper equipment, interpretation of data. Write the Society at 7716 Race St., Philadelphia 13, Pa., per paper cover \$2.50, cloth cover \$3.75.

New Books

"Design for Helicopters" and "Supplement to Design for Helicopters" are booklets discussing in detail several types along with their configurations by J. B. Luskens, M.B. The former booklet covers layout of conventionally powered main and single rotor copters having manually and automatic black-patch angle changing means and variable speed or variable pitch steering. The latter booklet describes a copter having jet-powered rotor with manual or auto black-patch angle changing means, steering, and provision for additional forward flight.

Fare for both tickets is \$2.50.
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"Dictionary of Electronic Terms" is a 64-page booklet defining over 2100 terms used in industrial electronics. There are more than 125 diagrams of electronic circuits.

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Transport Revolution and Statesmanship

The revolution in air passenger transportation seems well under way. The overburdened airlines are slowly appealing to the mass travel market which the non-subsidized carriers first began to tap.

Generally, scheduled airline fares will be lower this year than last, and limited provision of package vacations and all-inclusive vacations may give air passenger figures a boost unprecedented in peacetime in war.

Some industries air traffic promoters expect not only to take rumble passenger business away from surface carriers but to induce many persons to fly who otherwise would stay close to home this vacation season. And while the bus and to some extent the train are competing with the family car, the airplane offers distance and time advantages far beyond the possibilities of the motor car. Since bus has been a major deterrent to flying, up to now. Public wars are safety no longer is the significant factor it used to be in keeping the public on the ground.

This creation of an entirely new travel market is a prime objective of the war-time airline program. And all recent history proves that once a customer is introduced to air transportation, he is sold, and will probably fly whenever and wherever he travels in the future.

Now too an coach rates which will be in effect this summer show up in sharp contrast to the higher fare short haul. The Eastern railroads introduced several coaches ago, but their rates were then the differential between rail and air tickets. In this route that has just an average the airlines offer rates even more attractive to the public than our buses. This, plus into the hands of the airlines.

The lines are beginning to rise from the ground. Carrying capacity is up to 10 percent. This is the airline's biggest intercity bus operator. These increases are on record which the War Relocation Authority estimates amount for almost a third of Cleveland's total business. The cutting of the differential between bus coach and air coach also is a step in the right direction for air.

The rail and bus lines that give an integrated extra mileage to the great movement in air transportation in this country which was launched (and ended here) in the fall of 1944 when American Airlines opened its successful transcontinental, aimed to increase regular lines and break the back of the disconnected trend to higher fares and higher outlays prepared by the CMB and a few other carriers.

We think the industry still does not realize the extent of the revolution it is about to see. It is constantly being surprised at the number of persons who are willing to fly at reasonable rates. Will ever beyond before of moving up to seven and ten sections of single individual? Yet this has been necessary recently.

So far, only a few of the railroads have been really forced about what the airlines will do to their long-distance pas-

enger traffic. This summer, when they all will see the hard writing on the wall, look out!

Then the air transport industry, hardly out of the woods on postwar service, operations and equipment needs, will begin running headlong into state, more perplexing problems stirred up by powerful surface transportation competition. Several railroads already have opened a spirited campaign, both underground and in the open. One son or another they are trying to revive the business, energetic youngsters who are "growing too big for his britches."

The rail, air can be seen, will bring the historic wing of these who is to compete intensely. They will fight against shoulder the aid and keeping up with the times by meeting new needs. They will say they speak not for themselves, of course, but in the "national interest," and for thousands of hapless constituents—widows and children.

And Congress may be pushed into going along with the trend already in well started by the present Administration to curtail all transport regulation in one sweep under the guise of "efficiency," setting up a "coordinated national transportation policy." The imminent absorption of the Maritime Commission by the Commerce Department is one more step in this direction.

With its constant harping on the likelihood of "socialization of transportation," the railroad industry seems to display little hope of improving its own economic condition by cleaning house, improving service, experimenting with bus rates. Instead it appears to be concentrating its efforts on efforts to make the airlines and other competitors "pay their way" for various government services.

This is a monstrous objective. We are for it. But the best way to get Airlines to see more of its way is to present it to serve the public efficiently, without its inherent advantages. The railroads don't want the airlines to get their way for the good of the country, they want to strike the airlines' growth and initiative. Those in Airlines who have some government help, simply are asking for more government regulation, less private initiative, and a state of semi-stagnation we already see in some railroad circles.

Naturally, a national policy makes sense that gives each means of transport the freedom to perform its service in its own best. But the danger is frightening that Airlines will be outlawed by an unworkable, dogmatic bureaucracy in which even more impossible than the Interstate Commerce Commission. Airlines has suffered enough interference from the hands of the CMB, one of the greatest agencies in the government, which is set up by Congress especially to "serve and protect Airlines."

Airlines' growth will bring solving own problems. It seems desperately important that the airlines agree to stop their bickering and work together as an industry for a great cause. Statesmen will be needed in this business.

—Robert H. Wood

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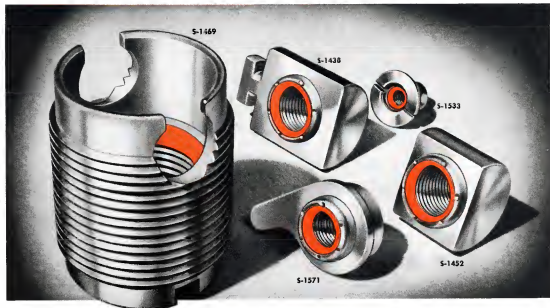
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